

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
Amendment of Parts 15, 73 and 74 of the	)	MB Docket No. 15-146
Commission's Rules to Provide for the	)	
Preservation of One Vacant Channel in the UHF	)	
Television Band For Use By White Space	)	
Devices and Wireless Microphones	)	
	)	
Expanding the Economic and Innovation	)	GN Docket No. 12-268
Opportunities of Spectrum Through Incentive	)	
Auctions	)	

**COMMENTS  
OF THE CONSUMER ELECTRONICS ASSOCIATION**

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**I. INTRODUCTION AND SUMMARY**

The Consumer Electronics Association (“CEA”)<sup>1</sup> submits these comments in response to the Federal Communications Commission’s June 16, 2015 Notice of Proposed Rulemaking in the above-captioned proceedings.<sup>2</sup> CEA supports the Commission’s proposal to preserve at least one vacant ultra-high frequency (“UHF”) channel for use by white space devices and wireless microphones as a general matter and at least two vacant UHF channels for such use in

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<sup>1</sup> The Consumer Electronics Association is the technology trade association representing the \$285 billion U.S. consumer electronics industry. More than 2,000 companies enjoy the benefits of CEA membership, including legislative and regulatory advocacy, market research, technical training and education, industry promotion, standards development and the fostering of business and strategic relationships. CEA also owns and produces CES – The Global Stage for Innovation. All profits from CES are reinvested into CEA’s industry services.

<sup>2</sup> *Amendment of Parts 15, 73 and 74 of the Commission’s Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Space Devices and Wireless Microphones; Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, MB Docket No. 15-146, GN Docket No. 12-268, 30 FCC Rcd 6711 (2015) (“*Vacant Channel NPRM*” or “*NPRM*”).

geographic areas where the 600 MHz duplex gap is impaired.<sup>3</sup> Preserving at least one vacant channel for unlicensed operations and wireless microphones (or two vacant channels in the case of an impaired duplex gap) will enable manufacturers and service providers to meet the exploding consumer demand for unlicensed wireless services and allow wireless microphone users to continue to operate.<sup>4</sup>

This action will also encourage the development of new and innovative services that require greater unlicensed bandwidth or take advantage of the unique propagation characteristics of the 600 MHz spectrum band. To achieve this goal, the Commission has proposed requiring low-power television (“LPTV”), TV translator, and Broadcast Auxiliary Service (“BAS”) operators to demonstrate that any new, displacement, or facilities modification applications preserve at least one vacant channel, the so-called “demonstration requirement.”

While the overall concept of the demonstration requirement is sound, CEA urges the Commission to make certain modifications. First, CEA makes three recommendations by which the Commission could ensure that the demonstration requirement methodology accounts for the population distribution in any particular area. Second, CEA urges the Commission to clarify that vacant channel demonstrations must account for the differing separation distances the commission adopted for Television White Space (“TVWS”) devices and wireless microphones. Third, the Commission should consider significant licensed wireless microphone reservations and public safety exclusion zones when determining whether the vacant channel requirement has been met. These modifications to the proposed rule will eliminate any ambiguity or potential confusion.

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<sup>3</sup> See *Id.* ¶¶ 2, 4.

<sup>4</sup> See *Id.* ¶ 10.

The Commission has a firm legal foundation for adopting this proposal to preserve at least one or two vacant UHF channels for use by unlicensed white space devices and unlicensed wireless microphones, and it should do so.

**II. THE COMMISSION SHOULD PRESERVE AT LEAST ONE (AND IN SOME CIRCUMSTANCES AT LEAST TWO) VACANT UHF CHANNELS FOR USE BY UNLICENSED DEVICES AND WIRELESS MICROPHONES.**

CEA supports the FCC's tentative conclusion to preserve at least one vacant UHF channel for use by unlicensed white space devices and unlicensed wireless microphones as a general matter and at least two vacant UHF channels for unlicensed use in geographic areas where the 600 MHz duplex gap is impaired. Consumer demand for unlicensed connectivity is increasing at a rapid pace. Innovative new applications, services, and technologies that use unlicensed wireless spectrum will also benefit from additional spectrum.<sup>5</sup> Preserving at least one or two vacant UHF channels will ensure that the operation of unlicensed devices will remain "an important part of our nation's communications capabilities."<sup>6</sup> Preserving a minimum number of vacant UHF channels will also enhance the unlicensed functionality of licensed devices, such as the millions of Wi-Fi and Bluetooth-enabled smartphones already on the market.

CEA recently estimated that unlicensed technologies such as Wi-Fi hotspots, wireless headsets, remote car door openers, and other innovations contribute \$62 billion in annual incremental retail sales value to the U.S. economy.<sup>7</sup> The Commission's proposal to preserve at least one or two vacant UHF channel for unlicensed use strikes a reasonable balance between

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<sup>5</sup> *Id.* ¶ 10.

<sup>6</sup> *Id.* ¶ 10.

<sup>7</sup> Consumer Electronics Association, *Unlicensed Spectrum and the American Economy: Quantifying the Market Size and Diversity of Unlicensed Devices* 2, CE.org, <http://www.ce.org/CorporateSite/media/gla/CEAUnlicensedSpectrumWhitePaper-FINAL-052814.pdf> (last visited Sept. 21, 2015).

protecting the operation of free, over-the-air television broadcasting and enabling the operation of these valuable unlicensed offerings.

**A. The Commission Should Adopt A Straightforward Process By Which LPTV, TV Translator, And Broadcaster Auxiliary Service Applicants Demonstrate That Any New, Displacement, Or Facilities Modification Application Will Not Eliminate The Last Available UHF Channel In A Market.**

The FCC can help satisfy consumer demand for unlicensed connectivity by adopting a straightforward process by which LPTV, TV Translator, and BAS applicants demonstrate that any new, displacement, or facilities modification applications that they propose will not eliminate the last available vacant UHF channel in a market or the last two vacant UHF channels in markets where the duplex gap is impaired. In the *Vacant Channel NPRM*, the Commission proposes just such a process. Under the Commission proposal, LPTV, TV Translator, or BAS applicants must “perform an analysis and submit a showing with its application demonstrating that white space devices and wireless microphones operating within the same area as the proposed broadcast or BAS station will have access to at least one channel throughout the applicant’s proposed protected service area.”<sup>8</sup> The Commission’s proposed demonstration requirement is only minimally burdensome on LPTV, TV Translator, and BAS applicants and ensures unlicensed devices will have access to sufficient spectrum in the 600 MHz band.

Most notably, the Commission’s proposed demonstration process uses information already stored and publicly available in white space databases; therefore, the process will require only limited computation and data collection to determine whether an applicant’s proposed application preserves at least one vacant channel for unlicensed and wireless microphone use.<sup>9</sup>

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<sup>8</sup> *Vacant Channel NPRM* ¶ 36.

<sup>9</sup> *Id.* ¶ 42.

Further, the Commission’s proposal will not require an applicant to preserve a specific or consistent channel across the entirety of the applicant’s service area.<sup>10</sup>

The Commission’s proposal also protects full-power and Class A broadcast licensees displaced by the incentive auction during the transition. Full-power and Class A broadcast licensees that apply for new facilities during the 39-month post-auction transition period would be exempt from the new demonstration requirement. Moreover, broadcast applicants for new or modified stations would not have to demonstrate that the requisite vacant UHF channels will remain in the affected market following implementation of the proposed allotment change until *after* the 39-month post-auction transition period.

Perhaps most importantly, the FCC’s repacking simulation results also show that at least two vacant channels are available in areas covering the vast majority of population across the country. Preserving at least one (or even as many as two) vacant channels for unlicensed use should therefore not excessively affect broadcast stakeholders because most will have at least one other vacant channel in which to operate.<sup>11</sup>

In sum, the Commission’s requirement to preserve one or, in extraordinary cases, two vacant channels for unlicensed use and its approach to vacant channel demonstrations provides LPTV, TV Translator, or BAS applicants with needed operational flexibility while meaningfully advancing the Commission’s goal of preserving spectrum for use by unlicensed wireless devices and wireless microphones.

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<sup>10</sup> *Id.* ¶ 41.

<sup>11</sup> *Id.* ¶ 11 (“The 100 repacking simulation results previously published by Commission staff show that the areas encompassing the vast majority of population across the country would have at least two vacant channels available. In any event, the effect of the proposal would be to reduce by only one the total number of vacant channels that would otherwise be available in an area.”) (citations omitted).

**B. The Commission's Vacant Channel Demonstration Methodology Should Accurately Reflect The Population Of The Area Under Analysis And Should Not Exclude Cells That Are Within Or Partially Overlap A Station's Existing Contour.**

The Commission's proposed vacant channel demonstration requirement is generally sound, but CEA offers three modifications for ensuring the methodology accurately reflects the population of the area under analysis. First, the methodology does not account for the population distribution in each area. As proposed, the methodology risks identifying a vacant channel where one does not exist for much or all of the population in an area. The Commission should instead adopt a methodology for the vacant channel demonstration consistent with the ISIX methodology. Second, CEA urges the Commission to adopt as part of its methodology the same nationwide 2 kilometer x 2 kilometer grid that the FCC will create for the ISIX methodology. Third, the FCC's methodology should not exclude otherwise untested cells from the calculations of availability because a portion of that cell happens to overlap with an applicant's existing service contour.

*Properly Account for Population Distribution.* The Commission proposes that vacant channel demonstrations use a 2 kilometer x 2 kilometer grid and then calculate whether at least one channel is available at the center point of each cell in the grid.<sup>12</sup> Under this scenario, however, an entire 2 kilometer x 2 kilometer cell could be declared vacant when in fact most of the population resides off-center in a small portion of the cell where a vacant channel is not available. Thus, using the center of each cell could create a false showing that the cell is vacant when in fact most or all of the population of the cell is unable to access the vacant channel.<sup>13</sup> The Commission appears to recognize the importance of accounting for the population

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<sup>12</sup> *Id.* ¶ 43.

<sup>13</sup> *Id.* ¶ 48.



distribution in a cell and asks for comment on whether the center of the cell should be determined by the center of the population.<sup>14</sup>

To ensure that “the [vacant channel] analysis is sufficiently detailed so as not to miss locations where no vacant channel is available,”<sup>15</sup> the Commission should adopt a methodology for the vacant channel demonstration consistent with the ISIX methodology it previously approved. Under this methodology, interference is evaluated using the “population centroid” of the 2x2 grid, instead of using an arbitrary point of a grid, such as the center point. In other words, the point in each cell in which channel vacancy is determined should be a point that considers the distribution of the population in each cell (*i.e.*, a “pop-weighted centroid”).

***Ensure Proper Grid Size and Orientation.*** The Commission also requests comment on the size and orientation of the grid.<sup>16</sup> Consistent with CEA’s recommendation that the vacant channel methodology should be consistent with ISIX, the Commission should adopt the same common, nationwide 2 kilometer x 2 kilometer grid that the FCC will create (or has already created) for the ISIX methodology (*i.e.*, the “common grid”).<sup>17</sup> Using a common grid, the coordinates of the pop-weighted centroid will have already been calculated and the exact orientation of the grid will be random to any particular new transmitter. Also, to ensure a complete evaluation, 2 kilometer x 2 kilometer cells that partially overlap the contour but for which the pop-weighted evaluation point falls outside the proposed station’s contour should be

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<sup>14</sup> *Id.* ¶ 48.

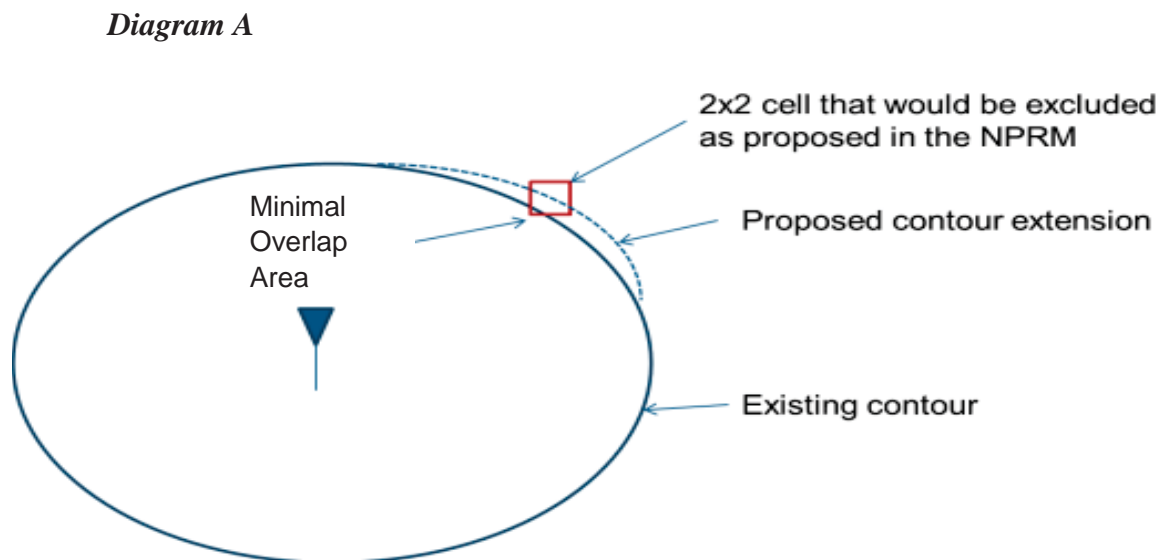
<sup>15</sup> *Id.* ¶ 43.

<sup>16</sup> *Id.* ¶ 48.

<sup>17</sup> *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, GN Docket No. 12-268, 29 FCC Rcd 6567 ¶ 132 (2014) (“*Incentive Auction R&O*”).

included in the demonstration. That is, these points should be treated the same as 2 kilometer x 2 kilometer cells whose pop-weighted centroid is within the contour.

***Do Not Inadvertently Allow Some Grids to Go Uncounted.*** The FCC will assess channel availability using small geographic grids of territory within each market and, to save time and expense, proposes to exclude new broadcast contours that overlap with existing broadcast contours from additional calculations.<sup>18</sup> This proposal will function as intended in most circumstances; however, the proposal could undercount channel availability often enough in some areas to warrant a correction. As shown in Diagram A below, the proposed methodology would exclude those cells that overlap only slightly with a station's existing contour even though the proposed new contour covers the area more completely.<sup>19</sup> Under the



FCC's proposed methodology, cells that only slightly overlap the existing contour would be excluded from the analysis and thus be treated as available for use, even if a significant portion

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<sup>18</sup> *Vacant Channel NPRM* ¶¶ 45, 47 (proposing to exclude “all cells that are within or overlap any portion of the station’s existing protected area”).

<sup>19</sup> *Id.* ¶¶ 45, 47.

of the cell area covers the proposed extension and the analysis demonstrates that no vacant channel is available at the population center of the cell. To prevent this outcome, the Commission should *not* exclude cells that overlap the existing protected contour when the area of the contour extension could cover a much larger portion of that 2 kilometer x 2 kilometer cell, including the population centroid.

**C. The Commission Should Clarify That Vacant Channel Demonstrations Must Account For The Differing Separation Distances The Commission Adopted For TVWS Devices And Wireless Microphones.**

The Commission should clarify the requirements in the *Vacant Channel NPRM* as they relate to the separation distances the Commission has already adopted for TVWS devices and wireless microphones. Specifically, the Commission should clarify that, using the separation distances the Commission adopted in the *Part 15 NPRM*,<sup>20</sup> an applicant's vacant channel demonstration must show that at least one vacant channel remains in the larger of the two areas.

The *Vacant Channel NPRM* states that “[t]he co-channel television protection requirements for wireless microphones are the same as for 40 milliwatt personal/portable white space devices, so a channel that the white spaces database indicates as being available for 40 milliwatt personal/portable white space devices will also be available for wireless microphones.”<sup>21</sup> In fact, the protection requirements the FCC proposes differ from those adopted in the *Part 15 NPRM*. In the *Part 15 NPRM*, for example, the FCC adopted a separation distance of 1.3 kilometers for 40 milliwatt personal/portable white space devices, and maintained

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<sup>20</sup> *Amendment of Part 15 of the Commission's Rules for Unlicensed Operations in the Television Bands, Repurposed 600 MHz Band, 600 MHz Guard Bands and Duplex Gap, and Channel 37*, Notice of Proposed Rulemaking, ET Docket No. 14-165, GN Docket No. 12-268, 29 FCC Rcd 12248 ¶ 42 (2014) (“*Part 15 NPRM*”).

<sup>21</sup> *Vacant Channel NPRM* ¶ 42 (emphasis added).

the 4-kilometer separation for unlicensed wireless microphones.<sup>22</sup> Furthermore, the definition of “wireless microphones” includes both licensed and unlicensed.<sup>23</sup> According to the *Wireless Microphone Report and Order*, moreover, licensed wireless microphones can sometimes operate closer to and even within co-channel TV contours under specific conditions, although the default separation distance remains 4 kilometers.<sup>24</sup>

As proposed, the separation distances in the *NPRM* are inconsistent with the recent Part 15 and wireless microphone orders, which has the potential to cause errors or confusion. The Commission should acknowledge the inconsistency and clarify that, using the separation distances the Commission adopted in the *Part 15 NPRM*, an applicant’s vacant channel demonstration must show that at least one vacant channel remains in the larger of the two areas (*i.e.*, 4 kilometers from the proposed station’s contour).

**D. The Commission Should Consider Significant Licensed Wireless Microphone Reservations and Public Safety Exclusion Zones In Evaluating Vacant Channel Demonstrations.**

Both temporary wireless microphone and temporary BAS registrations, as well as public safety use in Channels 14-21, can dramatically affect channel availability. Accordingly, both should be taken into account in making vacant channel determinations. The Commission, however, tentatively concludes that wireless microphones and temporary BAS operations can be excluded from the vacant channel analysis and does not explicitly address public safety exclusion zones.<sup>25</sup> Under this approach, a channel may be viewed as “vacant” for purposes of a

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<sup>22</sup> *Part 15 NPRM* ¶ 66, 150.

<sup>23</sup> *Vacant Channel NPRM* ¶ 1 n.2.

<sup>24</sup> *Promoting Spectrum Access for Wireless Microphone Operations*, Report and Order, GN Docket Nos. 14-166, 12-268, FCC 15-100 ¶ 17 (rel. Aug. 11, 2015).

<sup>25</sup> *Vacant Channel NPRM* ¶¶ 38, 39.

vacant channel demonstration when, in fact, it is occupied the majority of the time by a licensed wireless microphone user or is unavailable as the result of a public safety exclusion zone.

Absent consideration of these potentially extensive uses, the vacant channel rule might fail to fulfill its purpose of supporting general unlicensed use.

### **III. THE COMMISSION HAS THE LEGAL AUTHORITY TO PRESERVE A VACANT CHANNEL FOR UNLICENSED AND WIRELESS MICROPHONE USE.**

The FCC has ample authority to preserve additional channels for use by unlicensed devices and wireless microphones. Title III of the Communications Act of 1934, “endow[s] the Commission with expansive powers,” including “broad authority to manage spectrum . . . in the public interest.”<sup>26</sup> Additionally, Section 6403(i)(1) of the Spectrum Act preserves the Commission’s authority to adopt the vacant channel proposal in the *NPRM* by stating that “nothing in section 6403(b) shall be construed to . . . expand or contract the authority of the Commission, except as otherwise expressly provided.” The Commission correctly explains that “[t]here is no express provision in section 6403(b) prohibiting the Commission from requiring LPTV and TV translator stations to consider how their proposed new, displacement, or modified facilities will impact the availability of vacant channels for white space devices and wireless microphones.”<sup>27</sup> Section 6403(i)(2) states that nothing in the repacking provisions of the Spectrum Act “shall be construed to . . . prevent the implementation of the Commission’s ‘White

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<sup>26</sup> *Vacant Channel NPRM* ¶ 18.

<sup>27</sup> *Vacant Channel NPRM* ¶ 18. While the Spectrum Act constrains the Commission’s authority to repack broadcasters involuntarily, *see* Spectrum Act, § 6403(b), it does not prevent the FCC from defining the range of available channels when a broadcaster voluntarily seeks new or modified facilities.

Spaces' Second Report and Order . . . in the spectrum that remains allocated for broadcast television use after the reorganization required by' section 6403(b).”<sup>28</sup>

The Commission’s proposal will ensure that TVWS devices and wireless microphones continue to have access to unused TV bands channels, consistent with the *TV White Spaces Second Report and Order*.<sup>29</sup> As discussed in Section III, the burdens on LPTV, TV translator, and BAS operators are low compared to the importance of ensuring that consumers continue to benefit from unlicensed and wireless microphone use of one or more vacant UHF channels. To the extent this proposal represents a departure from prior Commission decisions, the proposal is prudent, fully explained, and minimally burdensome.<sup>30</sup> The Commission is therefore well within its authority and discretion to balance competing spectrum allocation and assignment policies in arriving at its proposed spectrum management proposal.<sup>31</sup>

#### IV. CONCLUSION

The Commission should adopt its proposals to preserve at least one vacant UHF channel for use by white space devices and wireless microphones as a general matter and at least two vacant channels for such use in geographic areas where the 600 MHz duplex gap is impaired. With the modifications described above, the Commission’s demonstration proposal balances the

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<sup>28</sup> *Vacant Channel NPRM* ¶ 18.

<sup>29</sup> *See generally Unlicensed Operation in the TV Broadcast Bands; Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band*, Second Report and Order, ET Docket Nos. 04-186, 02-380, 23 FCC Rcd 16807 (2008).

<sup>30</sup> *Vacant Channel NPRM* ¶ 19; *see also FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 514-16 (2009) (holding that a change in agency policy is subject to the same standard of reasonableness as initial agency action).

<sup>31</sup> *Vacant Channel NPRM* ¶ 18 (citing *Cellco P’ship v. FCC*, 700 F.3d 534, 541-42 (D.C. Cir. 2012) (internal quotes and citations omitted). Determinations with respect to spectrum management policy (including allocation and assignment policies) have long been recognized to be precisely the sort that Congress intended to leave to the broad discretion of the Commission under section 303 of the Communications Act. *See Nat’l Ass’n of Regulatory Util. Comm’rs v. FCC*, 525 F.2d 630, 635-36 (D.C. Cir. 1976) (initial allocation of spectrum for land mobile radio service).

needs of LPTV, BAS, and TV translator operators with the need for additional spectrum resources for use by unlicensed devices and wireless microphones. Ensuring additional spectrum for use by unlicensed devices and wireless microphones will empower consumer electronics manufacturers and developers to bolster existing applications for unlicensed spectrum, such as Wi-Fi and Bluetooth. Preserving at least one vacant channel for unlicensed devices will also allow consumer electronics manufacturers and developers to create new and innovative applications for unlicensed spectrum, such as ground-breaking Internet-of-things devices and applications, leading to benefits for consumers and the economy.

Respectfully submitted,

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